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AUTHOR Oxford, Rebecca L.
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ABSTRACT

The research foundations for understanding strategies of second language learning are outlined. Three research themes are highlighted: the importance of second language learning strategies, the effectiveness of strategies as demonstrated by research, and the definition and classification of these strategies. Second language learning strategies are important because they improve language performance, encourage learner autonomy, are teachable, and expand the role of the teacher in significant ways. Information on the effectiveness of language learning strategies has been gathered by a variety of means, including simple list-making, observations by teachers and researchers, interviewing, notetaking and diaries by students themselves, self-reporting surveys, factor analytic studies, and training studies involving experimental and control groups. Each of these ways of determining the utility of second language learning strategies is discussed, and a new and more complete taxonomy of second language learning strategies based on a comprehensive review of research is presented. (Author/MSE)

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SECOND LANGUAGE LEARNING STRATEGIES:

CURRENT RESEARCH AND IMPLICATIONS FOR PRACTICE

Rebecca L. Oxford

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Rebecca L. Oxford

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Center for Language Education and Research
University of California, Los Angeles

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For further information contact:

Amado M. Padilla, Director
Center for Language Education and Research
1100 Glendon Avenue, Suite #1740
Los Angeles, CA 90024

ABSTRACT

This paper presents the research foundations for understanding strategies for second language learning. Three research themes are highlighted: importance of second language learning strategies, effectiveness of strategies as demonstrated by research, and definition and classification of these strategies.

Second language learning strategies are important because they improve language performance, encourage learner autonomy, are teachable, and expand the role of the teacher in significant ways. Information on the effectiveness of language learning strategies has been gathered by a variety of means, including simple list-making, observations by teachers and researchers, interviewing, notetaking and diaries by students themselves, self-report surveys, factor analytic studies, and training studies involving experimental and control groups. The paper discusses each of these ways of determining the utility of second language learning strategies. Finally, the paper presents a new taxonomy of second language learning strategies based on a comprehensive review of research. This taxonomy is the most complete system now available for classifying second language learning strategies.

SECOND LANGUAGE LEARNING STRATEGIES: CURRENT RESEARCH AND IMPLICATIONS FOR PRACTICE

This paper presents the research foundation for understanding second language learning strategies. Three research themes are the focus of this paper: why second language learning strategies are important, how we know which second language learning strategies are effective, and how second language strategies are defined and categorized.

Why Learning Strategies Are Important

Research has shown that second language learning strategies are important for four key reasons. First, appropriate learning strategies are related to successful language performance. Second, using appropriate learning strategies enables students to take responsibility for their own learning. Third, learning strategies are teachable. Fourth, addressing learning strategies in their programs gives teachers an expanded role. We will examine each of these statements more fully.

Strong Relationship to Language Performance

Research comparing technical experts to novices indicates that experts use more systematic and useful problem-solving and comprehension strategies (Anderson, 1980, 1981; Brown, Campione, & Day, 1980; Larkin, 1980). The same finding occurs with expert language learners. Successful language learners generally use appropriate strategies, and these strategies help explain their outstanding performance (Naiman, Frohlich, & Todesco, 1975; Rubin, 1975, 1981; Wenden, 1985). Whether or not they are aware of what they are doing, good language learners tend to use strategies that are appropriate to their own stage of language learning, personality, age, purpose for learning the

language, and type of language (Politzer & McGroarty, 1983). Just as appropriate learning strategies help explain the performance of good language learners, inappropriate learning strategies help explain the frequent failures of poor language learners—and even the occasional weaknesses of good language learners (Hosenfeld, 1979a, 1979b; Reiss, 1983). If students and teachers know how learning strategies are most appropriately used, both groups can benefit greatly. Research provides us with numerous clues about how learning strategies enhance second language performance, as this paper will show.

Shifting Responsibility to the Learner

Using appropriate learning strategies enables students to take responsibility for their own learning by enhancing learner autonomy and self-direction. Why is it important for language learners to be active and independent and to see themselves as such? One answer comes from findings in cognitive psychology. These findings show that all learning--especially language learning--requires learners to actively assimilate new information into their own existing mental structures, thus creating increasingly rich and complex structures (Bates, 1972; Osgood, 1971; Sinclair de Zwart, 1973; Slobin, 1971). Active language learners develop their own understandings or models of the second language and its surrounding culture. As they work with the second language over time, active language learners gradually refine their own linguistic understanding and with practice increase their proficiency in the second language.

Appropriate learning strategies that encourage independent learning should be developed during classroom instruction. If this is done, the learner is able to keep on learning independently even when he or she is no longer taking

formal language instruction or when a large part of the language learning takes place outside of class.

Teachability of Learning Strategies

Learning strategies provide a basis for remediating many difficulties in second language learning and for improving the skills of all language learners. Unlike most other characteristics of the learner, such as aptitude, attitude, motivation, personality, and general cognitive style, learning strategies are teachable. While teachers cannot do much about some of the learner's other characteristics, research has shown that teachers can train students to use better learning strategies (Dansereau, 1978, 1985; Denney & Murphy, 1986; Henner-Stanchina, 1982; O'Malley, 1984; O'Malley, Russo, & Chamot, 1983; O'Malley, Russo, Chamot, Stewner-Manzanares, & Kupper, 1983; Russo & Stewner-Manzanares, 1985; Weinstein, Schulte, & Cascallar, 1984; Wittrock, Marks, & Doctorow, 1975). Students can also train themselves to improve their own strategies through a variety of self-help materials.

An Expanded Role for Teachers

Shifting responsibility to the learner does not mean the teacher forfeits employment, importance, or prestige. On the contrary, it means that the teacher has an expanded role. That role not only includes imparting information, providing practice opportunities, and offering comprehensible input to the learner, but also includes determining which strategies the learner is using, assessing how appropriate those strategies are, and teaching the learner how to use more appropriate strategies that foster self-directed learning. The teacher's role expands to encompass stronger encouragement of appropriate learning strategies.

We have shown that learning strategies are important for four reasons. They improve language performance, encourage learner autonomy, are teachable, and expand the role of the teacher in useful ways. More arguments supporting the importance of learning strategies may be discovered through further research. Based on our understanding of the importance of learning strategies, we can now ask: "How do we know which learning strategies are effective?" This question is the focus of the next part of this paper.

How We Know Which Learning Strategies Are Effective

Research has identified effective learning strategies and has shown under what circumstances they are most effective. This section presents two kinds of research demonstrating the influence of learning strategies: general academic studies and studies specifically involving second language learning.

Research on General Learning Strategies

Research on general (academic but not second language) learning strategies has demonstrated five main points that are relevant to second language learning.

1. Appropriate learning strategies improve reading performance. Specific strategies shown to be useful include looking for cues, using advance organizers, employing association techniques to improve memory, developing retrieval techniques such as the "loci" method (remembering an idea by remembering where it is on the page or in the chapter), and making a guess when the meaning is not fully obvious (see O'Neil, 1978; Orasanu, 1985).

2. The learner is an active, involved part of the learning process, using multiple strategies to improve comprehension and retention (Orasanu, 1985). Experts use the best strategies (Larkin, 1980).

3. Students apply varied learning strategies to different situations and subject areas, since the same learning strategies may not be equally useful in all settings and all subject areas (O'Neil, 1978). The usability of learning strategies is affected by many factors, such as the demands of the specific task and the learner's aptitude, cognitive maturity, overall learning style, and motivation (Schmeck, 1983).

4. Learning strategies can be successfully taught to a variety of students in different environments. Such training is beneficial. Strategy training results in a modest but significant improvement in student achievement (Denney & Murphy, 1986).

5. There is no consensus about how to teach learning strategies. Some studies (e.g., Brown, Campione, & Day, 1980; Dansereau, 1985; Day, 1980; McCombs & Dobrovolny, 1982; Weinstein & Underwood, 1985) favor explicit strategy training, in which learning strategies are the primary topic and students are taught to monitor their own use of the strategies. A different approach is embedded strategy training, in which the strategies to be trained are embedded in the regular content of an academic subject area such as reading, math, or science. A combination strategy training approach, in which explicit strategy training is followed by embedded strategy training with the "cues" or "prompts" gradually fading out, has also been recommended (Denney & Murphy, 1986).

More information on these strategies is available in Dansereau, Long, McDonald, & Actkinson (1975); Dansereau, Long, McDonald, Actkinson, Ellis, Collins, Williams, and Evans (1975); Weinstein (1978); and Weinstein, Schulte, and Cascallar (1984). Many of the findings on general learning strategies are

echoed by the results of research on second language learning strategies, discussed next.

Research on Second Language Learning Strategies

Research in the area of second language learning strategies has evolved from simple lists of learning strategies to more highly sophisticated investigations using various forms of data gathering. We will discuss here each of the most prevalent types of data gathering in the area of second language learning strategies: (a) list-making, (b) observations, (c) interviews, (d) notetaking and diaries, (e) structured self-report surveys, (f) factor analytic studies, and (g) training studies.

Interesting but unvalidated strategy lists. Many published lists of second language learning strategies, particularly those which came out more than a decade ago, were based on folklore, common sense, and the unstructured, personal observations of the list-makers. Although these lists were not systematically validated at the time they were presented, many of the listed strategies were also identified in later, more empirical studies. These lists are important because they have been widely publicized and because they have shaped many teachers' understandings of how students learn a second language.

For example, Stern (1975) presented an early list of second language learning strategies. When faced with problems at various stages of language learning, the good language learner exhibits the following learning strategies, according to Stern:

1. An active approach to the learning task;

2. A tolerant and outgoing approach to the target language and empathy with its speakers;

3. Technical know-how about how to tackle a language;

4. Strategies of experimentation and planning, with the aim of developing the new language into an ordered system;

5. A constant search for meaning;

6. Willingness to practice;

7. Willingness to use the second language in real conversation;

8. Self-monitoring and critical sensitivity to second language use; and

9. Development of the target language more and more as a reference system and medium of thought.

In their book, Rubin and Thompson (1982) advised students on how to become better language learners. These authors gave students 14 practical strategies to use:

1. Determine the learning methods that are best for the individual;

2. Organize;

3. Be creative;

4. Make opportunities to practice;

5. Learn to live with uncertainty;

6. Use memory devices;

7. Learn from errors;

8. Use linguistic knowledge;

9. Use the context to enhance comprehension;

10. Make intelligent guesses;

11. Memorize some word strings as wholes;

12. Learn formalized routines;

13. Employ certain production techniques; and

14. Use varying styles of speech.

In addition to these strategies, Rubin and Thompson emphasized using such aids as teachers, textbooks, dictionaries, language tapes and recordings, reference grammars, language courses, and native speakers.

We have discussed simple list-making. Now we will turn to a different technique for determining which learning strategies are effective: formal observation.

Formal observation of second language learning strategies. Rubin (1981) used formal observation to identify learning strategy use in English as a second language (ESL) classrooms. She and her colleagues examined regular classes with an observation scale. According to Rubin, the classroom observations were not very productive because the observed teachers focused on getting correct answers and not on the process by which students derived the answers. More productive results, said Rubin, came from written and videotaped observations of a lively oral communication activity known as the strip-story, in which students were each given a sentence from a story and were required to figure out the entire story cooperatively. Some key strategies Rubin observed in this activity include self-correction, clarification requests, and recognition of narrative structure.

One difficulty with strategy observations is that many learning strategies are purely internal and cannot be easily observed. Some examples include self-encouragement, planning, and making mental associations between new material and material already internalized. Because certain strategies are so difficult to capture through observation, researchers have looked to other methods, such as interviewing.

The use of interviews in second language learning strategy research. Instead of merely speculating or observing, some researchers have turned to the

learner to ask what strategies he or she uses to learn a second language. For example, Naiman et al. (1975) interviewed adults who had learned foreign languages in the past. Based on the interviews, these investigators reported nine keys to success in second language learning: (a) immersion in the target language and culture, (b) contact with native speakers, (c) motivation, (d) good teachers, (e) a stimulating learning environment, (f) positive parental influence, (g) inherent interest in languages, (h) certain personality characteristics, and (i) use of specific learning strategies (emphasis ours). Six successful learning strategies cited by these investigators include:

1. Finding a set of learning preferences appropriate to the individual and selecting language situations that allow those preferences to be used;

2. Actively involving oneself in the language-learning process through language activity, identifying and dealing with one's own learning problems, and generally seeking opportunities to use the language;

3. Developing or using an awareness of the language as both a formal system of rules and a means of communication;

4. Constantly extending and revising one's own understanding of the second language system as new information becomes available;

5. Gradually developing the second language into a reference system separate from the native language and learning to think in the second language; and

6. Effectively handling the emotional demands imposed by learning the language.

Papalia and Zampogna (1977) interviewed French III and Spanish II high school students to examine strategies that they used to understand texts and learn vocabulary. Based on this study, Papalia and Zampogna reported that some

key ways to improve comprehension include reading aloud, reading for context, guessing, skipping inconsequential words, expecting the text to make sense, refraining from verbatim translating, looking for cognates, and looking up unfamiliar words. In this study, successful vocabulary-related learning strategies include working with partners, learning concrete action words, using flashcards, developing meaningful conversations, playing games, drawing pictures, doing exercises, and using repetition.

Hosenfeld (1979b) developed a systematic interview procedure in which students were asked to "think aloud" as they performed second language tasks. The purpose of the interview was to obtain descriptions of the learner's strategies and to use this information to help the learner overcome any difficulties he or she had. Hosenfeld noted two kinds of self-reports that can be obtained through the interview procedure: introspective and retrospective. Students who thought aloud while doing the task were introspecting, while those who described what they did after the fact were retrospecting. Retrospective interviews sometimes resulted in incomplete information, so Hosenfeld recommended using introspection or a combination of the two approaches. Using the interview procedure, Hosenfeld found that differences in achievement in second language learning were often linked to the use of inefficient or ineffective strategies. As Omaggio (1981) noted, learners are often able to discover the source of their difficulties by comparing their interview responses with the responses of more successful learners.

O'Malley and his colleagues (O'Malley, Russo, Chamot, Stewner-Manzanares, & Kupper, 1983) used interviews of beginning and intermediate high school ESL students to identify learning strategies used in typical classroom activities: pronunciation, oral drills, vocabulary learning, operational language use, and

so on. Students were also formally observed, but the interviews produced much more reliable results than the observations. O'Malley and his colleagues reported that the interviews identified the use of 26 strategies, which were divided into two categories: cognitive strategies (strategies which operate directly on the language) and metacognitive strategies (support strategies which help the students plan, monitor, and evaluate their own learning). Both beginning and intermediate students used more cognitive strategies (especially repetition, notetaking, cooperation, and clarification) than metacognitive strategies. Of the metacognitive strategies that were used, almost all were related to planning and attention-enhancing. In the interviews, students reported little use of self-correction and self-evaluation and no use of self-reinforcement--all metacognitive strategies.

In the same study, O'Malley and his associates interviewed teachers to discover which learning strategies they observed and/or encouraged among their students. According to O'Malley and his colleagues, teachers generally did not know which strategies their students were using but were interested in knowing more about learning strategies.

Russo and Stewner-Manzanares (1985) also used interview procedures, supplemented by classroom observations, to identify strategies used by ESL students (mostly Hispanic) in the U.S. Army. Strategies were classified into three categories: metacognitive, cognitive, and social. Strategies ESL soldiers reported frequently included (a) self-management, selective attention, and functional planning among the metacognitive strategies; (b) repetition and notetaking among the cognitive strategies; and (c) cooperation and requests for clarification among the social strategies. The soldiers indicated that they used metacognitive strategies with more complex language tasks, such as social

communication and oral presentations, and that they used cognitive strategies with simpler language tasks, such as vocabulary learning. In interviews, teachers generally showed a lack of understanding of their students' learning strategies.

Wenden (1985) used interview techniques to gather data about learning strategies. As an example, she described the strategies used by a young Spanish economist who was learning English. In the retrospective interview, the young man explained his behaviors in a way that enabled Wenden to cluster them as (a) cognitive strategies (e.g., using clues to guess the meaning; looking for rules and patterns); (b) communication strategies (e.g., using words already used by one's conversation partner; using explanations and drawings to communicate meaning); (c) global practice strategies (e.g., living with a family of native speakers of the second language; finding opportunities to practice); and (d) metacognitive strategies (e.g., planning the best way to learn; monitoring one's own mistakes and successes). Wenden has fruitfully used various self-report techniques, such as interviews, diaries, and questionnaires, to discover the learning strategies of her students.

Self-reporting of strategies using notetaking and diaries. Cohen and Aphek (1981) reported on the strategies used by English speaking college students who were learning Hebrew on a junior year abroad. As part of a vocabulary task, Cohen and Aphek asked students to write down the strategies they were using at the same time as they were trying to memorize the new words. This is a form of unstructured, introspective (as opposed to retrospective) notetaking. It can be considered a written analog to introspective oral self-reporting or thinking aloud. Cohen and Aphek reported that word lists were initially helpful for memorization, but that students eventually were able

to use words in context. These researchers state that although mnemonic devices sometimes slowed learning down and limited possible meanings, they nevertheless also made learning easier and helped maintain vocabulary.

In addition to writing down strategies while doing a language task, students can also use another kind of notetaking: the diary or journal. Students describe their strategies each day in a "Dear Diary" format and also express their degree of satisfaction with these strategies. Rubin (1981) provided examples of two different kinds of diaries: directed diaries (for which students had explicit instructions on which of their own strategies to observe and report) and less structured daily reports on strategy use. Rubin suggested that most students have to be taught how to report their strategy use and that students need to take notes so they won't forget the strategies they have been using.

Studies using self-report surveys of learning strategies use. Researchers increasingly use structured questionnaires or surveys to ask learners what strategies they employ. Self-report surveys have some advantages over less structured self-report methods. When compared with less structured self-report methods (like interviews, notetaking, or diaries), surveys are more statistically reliable and produce more comparable information across individuals--although the other methods may give more elaborated information. Self-report surveys have been successfully used in a number of studies.

Bialystok (1981) used a strategy inventory (focusing on practice with rules, functional practice, inferencing or guessing, and monitoring one's errors) in a controlled study with 10th and 12th grade students who were learning French. Bialystok stated that these strategies had different effects on achievement. Functional practice, which concentrates on authentic language

use, best promoted achievement on all tasks and continued to be an effective strategy even for advanced students. The appropriateness of a particular strategy, however, was dictated by the nature of the task; for example, monitoring one's own errors was more useful in writing than in reading or speaking. Finally, the use of strategies appeared to be related primarily to the learner's attitude and not to language-learning aptitude. This finding implies that encouragement of positive attitudes will enhance learning strategy use.

Reiss (1985) scientifically examined Rubin's (1975) previously unvalidated strategy list, which included the following seven items. According to Rubin, the good language learner:

1. Is a willing and accurate guesser, who has the ability to gather and store background information and clues (both linguistic and social) efficiently;

2. Has a strong drive to communicate or learn from communication and is willing to persevere until he or she gets a message across;

3. Is often uninhibited and willing to appear foolish or to make mistakes in order to learn or communicate;

4. Pays attention to form by looking for language patterns and by continually classifying, analyzing, and synthesizing information;

5. Takes advantage of all possible opportunities to practice;

6. Pays careful attention to his or her own speech as well as the speech of others and actively participates even when he or she is not called upon to perform; and

7. Attends to meaning and not just to surface structure or other language elements.

To test Rubin's strategies, Reiss employed two self-report surveys. Although Reiss noted that Rubin's "strategy" of being uninhibited is really not a strategy but a personality charcteristic, she decided to test Rubin's entire list and added one more strategy, the use of mnemonics. Respondents were experienced, university-level language learners, many of whom had been identified by their instructors as good language learners.

Reiss reported that good language learners in her study used all but one of Rubin's strategies: lack of inhibition (as partially measured by the personality variable of introversion/extroversion). Therefore, the good language learner is not necessarily uninhibited. As noted by Reiss, he or she may be a "silent speaker" who relies on mental participation rather than social participation. Reiss also stated that paying close attention to one's own and other's speech was the most frequently used strategy and that mnemonics were of surprisingly little importance. In this study, attention to form was more frequent than attention to meaning.

Ramirez (1986) used a learning behavior questionnaire to assess the language learning strategies used by adolescents studying French in rural and urban school settings in New York State. The questionnaire was adapted from Politzer's (1983) questionnaire, which in turn was based on the findings of research by Naiman, Frohlich, Stern, and Todesco (1978) and on an observation form by Rubin (1981). Ramirez assessed the influence of learning strategy use on French reading performance, French communicative performance, and achievement on a standardized French test. Ramirez reported that eight strategies contributed most to the success of learners in the three areas that were measured: (a) asking for clarification or verification, (b) using inferencing skills, (c) creating opportunities for practice, (d) memorizing,

(e) using vocabulary learning techniques, (f) employing available linguistic knowledge and contextual cues, (g) monitoring one's own performance, and (h) practicing.

Politzer and his colleagues (Politzer, undated-a, undated-b; Politzer, 1983; Politzer & McGroarty, 1983) investigated students of English as a foreign language and American students of French, Spanish, and German to determine how students' learning behaviors (as measured by a self-report survey) are related to motivation, achievement, and other factors. These studies, taken together, indicated that many variables may be significant in the choice of learning strategies: professional interests and orientation, motivation, national origin, course level, teaching methodology, language being studied, and goal of language learning (i.e., for communication, for reading technical materials, and so on). Furthermore, Politzer and McGroarty (1983) reported that a given strategy cannot be considered intrinsically good in all situations and for all purposes. Learning strategies required for communicative competence, for example, may be different from those needed for linguistic competence (skill in the formal rules of the language). These helpful caveats from Politzer and his colleagues remind us that the effectiveness of many learning strategies depends on the characteristics and needs of the learner and the requirements of the situation.

Factor analytic studies which identify generally useful strategies. Despite Politzer and McGroarty's (1983) caveats that no strategy can be considered intrinsically useful for all learners in all situations and for all purposes, some large-scale, factor analytic studies support the idea that a few strategies exist that are generally useful for most second language learners. These studies provide some evidence for the nearly universal importance of a

certain number of strategies, such as functional or naturalistic practice (that is, authentic language use).

Factor analysis involves gathering data on a group of individuals and then discovering the main, underlying factors which explain the greatest amount of the reported variability among individual people. The first factor accounts for the greatest amount of variation in the responses of individuals; the second factor explains the next largest amount of difference in responses among people; and so on. The top five factors per study are reported here. These are the five factors in each study which explain the greatest amount of difference among the respondents in terms of their frequency of using specific strategies.

The two largest studies of second language learning strategies to date (Oxford, 1986; Oxford & Nyikos, in progress) used the Strategy Inventory for Language Learning, or SILL, a self-report survey of second language learning strategy use. The SILL is highly reliable (.96 internal consistency), and it contains most of the strategies listed in the taxonomy of second language learning strategies found later in this paper.

In order to ensure that respondents would not merely answer in a "socially desirable" way, the SILL's directions explicitly state that there is no "right answer" to any of the items. Statistical results do not show any social desirability bias in the data.

The first study (Oxford, 1986) involved 483 adult, nonuniversity second language learners studying four languages (factor analysis loadings may be obtained from the author). It resulted in five key factors, each representing a set of strategies. Factor 1 centered on general study habits, such as previewing lessons, using time well, arranging the study environment optimally,

being prepared, skimming the reading passage before reading in detail, using repetition, and checking one's own performance. This factor explained the greatest amount of the variability in respondents' use of strategies. Factor 2, which accounted for the next largest amount of variability in strategy use, consisted of strategies for using the second language in authentic ways (functional practice). Examples included seeking native speakers with whom to talk, initiating conversations in the second language, attending movies in the second language, and so on. Factor 3 included strategies concerning the search for and communication of meaning. Some of these strategies were guessing (inferencing) when complete information was not available and finding ways to express meaning in actual conversation. Factor 4 contained strategies which involved studying or practicing alone, without interaction with other people; these strategies included many strategies for practicing rules. Factor 5 represented mnemonic or memory devices, such as remembering by location, making associations, and using rhymes.

Oxford and Nyikos (in progress) conducted another factor analysis using the same survey, the SILL, with a different group--1,200 university students learning five languages. Oxford and Nyikos reported that the factors for university students were similar to the factors found in the previous SILL analyses, which involved adult language learners in a nonuniversity setting. These results, while not definitive, supported the concept that certain strategies (or certain groups of strategies) may be generally useful for second language learning. The ordering of the factors, however, differed somewhat for the two groups studied. For example, general study skills appeared to be very important in explaining strategy differences among nonuniversity students but less important for university students; the reverse was true for formal,

rule-related practice. Communication of meaning in conversation seemed somewhat more important to the nonuniversity group than to the university group, while the reverse was true of mnemonics. Functional practice with authentic language was the second most salient factor for both groups, university and nonuniversity; it appeared to be truly essential for everyone. The results suggest that some of these generally useful strategies may be slightly more applicable in one setting than in another. Nevertheless, all the factors representing these strategies are important in explaining variability among respondents.

Using the two SILL samples noted above, Oxford and her colleagues are now conducting further research on the relationships among students' learning strategy use, attitudes, motivation, previous language experience, and second language proficiency. These forthcoming analyses will provide further information on the importance of specific learning strategies--and other learner-related variables--in explaining differences in language proficiency among students.

Factor analytic studies such as these are far more sophisticated than simple lists of second language learning strategies. Such studies, however, support the original line of common-sense wisdom that certain strategies, or groups of strategies, seem to be clearly important in second language learning and may explain differences among language learners.

So far, we have discussed six general ways to gather information on second language learning strategies: strategy lists, observations, interviews, notetaking and diaries, self-report surveys, and factor analytic studies. None of these methods required manipulating the actual classroom learning situation.

The next kind of investigation of second language learning strategies--the training study--requires such manipulation.

Training studies involving second language learning strategies. Most training studies concerning second language learning strategies have involved memory strategies for learning vocabulary. One set of studies indicates that the so-called keyword method, a particular mnemonic device that links an image to a sound, may be very helpful in learning vocabulary in the second language (Atkinson, 1975; Levin, 1981; Levin, McCormick, Miller, Beery, & Pressley, 1982; Pressley, Levin, Kuiper, Bryant, & Michener, 1982). The keyword is a native language word (like pot in English) that sounds like some part of the second language word that is to be learned (like potage, which means soup in French). In general, the keyword has no relation to the target second language word except for its similarity in sound. There are two stages in the keyword method. First, the learner associates the spoken second language word (potage) with the keyword (pot), an association that is formed quickly because the two words sound somewhat alike. Second, the learner forms a mental picture of the keyword "interacting" with the second language word (for example, the learner mentally sees the potage in the pot). While the keyword method has worked very well in experimental research settings in which it is taught to one group but not another, the method has not yet become widely used in typical second language classroom settings.

Though most second language learning strategy training studies have been limited to vocabulary learning, a few training studies have branched out into a wide variety of second language learning strategies. These studies have been described by Henner-Stanchina (1982), O'Malley (1984), and Russo and Stewner-Manzanares (1985).

Henner-Stanchina (1982) reported how she taught listening comprehension to foreign students learning ESL in an American university. In a single-group, exploratory study, students were asked to listen to oral texts (radio commercials, talk-show interviews, news broadcasts, and so on). They first listened for global comprehension and then played short segments repeatedly for more specific comprehension. They transcribed the texts on paper and were allowed to make corrections as they understood more through repeated playbacks of the texts. The teacher then classified their errors as perceptive, semantic, and syntactic and provided feedback. She successfully taught the students how to use inferencing (guessing) and self-correction of errors to improve students' listening comprehension.

O'Malley (1984) reported on an experimental study involving the training of second language learning strategies. Subjects were intermediate level ESL students. They were randomly assigned to three groups: metacognitive, cognitive, and control. The metacognitive group received training in the use of one metacognitive strategy (i.e., a strategy related to self-evaluation, attention, or planning) and up to two cognitive strategies (such as grouping, notetaking, or imagery). The cognitive group received training on two cognitive strategies but no metacognitive strategies. Students in the control group were told to perform the activity the way they would normally do it, with no strategy training. The language learning tasks included vocabulary learning, listening comprehension, and making a brief oral presentation. Students in the metacognitive and cognitive groups were instructed in the use of learning strategies 50 minutes per day for 8 days, along with the three types of language learning tasks. Explicit cues for using the strategies were faded on successive days of treatment for each activity. Results of O'Malley's

strategy training were not statistically significant in the vocabulary learning task. However, the two treatment groups (metacognitive and cognitive) outperformed the control group on several but not all of the listening tests. The treatment groups clearly outdistanced the control group in speaking.

Russo and Stewner-Manzanares (1985) conducted a strategy training study with Army ESL soldiers. This study was somewhat similar to the one conducted by O'Malley (1984) and was a second phase of the study mentioned earlier by Russo and Stewner-Manzanares. In the Army ESL study, strategy training was embedded in listening and speaking activities for 6 hours per day over a 5-day period. Strategies trained included selective attention, guessing, questioning for clarification, physical response, cooperation, self-evaluation, and functional planning. There was no control group; all sampled students received strategy training. Based on this study, Russo and Stewner-Manzanares reported that strategies were teachable for both listening and speaking but that relationships among training, ethnicity, task difficulty, and task performance were not always clear. Hispanics responded favorably to strategy training related to both listening and speaking, but Asians resisted these strategies. Strategy training helped students' performance in speaking more than listening, perhaps because the listening task was too difficult, according to Russo and Stewner-Manzanares.

Many more experimental training studies involving a treatment group and a control group should be conducted to determine the effectiveness of various second language learning strategies and the effectiveness of different ways to present strategy training. Not enough evidence is yet available from scientifically controlled training studies to draw many firm conclusions. It

is clear, however, that strategies can be taught through various kinds of training and that those strategies can influence students' performance.

This part of the paper has discussed the main ways in which information has been gathered on the effectiveness of various learning strategies. Strategy lists, observations, interviews, notetaking, diaries, structured self-report surveys, factor analytic studies, and training studies have all been discussed in terms of what they tell us about the effectiveness of strategies for second language learning. This discussion was designed to help the reader evaluate learning strategy research results in a more informed fashion. The next part of the paper describes a new taxonomy of second language learning strategies that was developed based on our own empirical research and that of others.

The New Taxonomy of Second Language Learning Strategies

Our taxonomy has two forms, a simplified form and an expanded form. The simplified version defines and categorizes a large number of strategies. The expanded version, which is too lengthy to be presented here, includes everything contained in the simplified form, shows how every strategy applies to each of the four language skills (listening, reading, speaking, and writing), and provides examples. Only the simplified taxonomy is found in this paper (see Appendices A and B). The expanded version is obtainable from the author.

Development of the Taxonomy

The taxonomy was developed after careful research into all prior learning strategy research, followed by extensive field testing and revision. At each stage, outside reviewers (teachers, students, and researchers) gave comments

and suggestions. The result is the most comprehensive second language learning strategy taxonomy available to date.

The stages in the development of the taxonomy were as follows:

Stage 1: Reviewing the research and developing the preliminary taxonomy. A careful review was conducted of the research presented above, as well as many other sources, both published and unpublished, on general learning strategies and on learning strategies specifically geared to language learning (Oxford-Carpenter, 1985b; Oxford, 1986). Learning strategy lists and taxonomies from many sources were examined. Taxonomies covering general learning strategies include those of Dansereau (1978); Weinstein (1978); and Weinstein, Schulte, and Cascallar (1984). Second language learning strategy lists and taxonomies consulted include those of Bialystok (1981); Bialystok and Frohlich (1978); Naiman et al. (1975); O'Malley (1984); O'Malley, Russo, and Chamot (1983); Rubin, 1975, 1981; Rubin and Thompson (1982); Stewner-Manzanares, Chamot, O'Malley, Kupper, and Russo (1983); and Wenden (1985). The review determined which strategies in the lists were based on scientific research and which were merely informed speculation. Each entry in every list was reviewed for accuracy and importance, and lists were checked for redundancies and inconsistencies. Following this review, a preliminary comprehensive taxonomy of second language learning strategies was developed (Oxford-Carpenter, 1985a).

Stage 2: Developing and field testing the strategy survey. At this stage, the Strategy Inventory for Language Learning, or SILL, was developed, based on the preliminary taxonomy. The current form consists of 121 items and asks language students to rate the frequency with which they used a given

strategy. By now the SILL has been completed by more than 1,800 language learners from universities, government agencies, and research institutions. The survey has proven to be reliable (.96 internal consistency reliability) and valid (strong content validity as seen in 95% classificatory agreement by two raters who mapped the survey items against the taxonomy items). Results indicate that almost all strategies students used are covered in both the survey and the taxonomy.

Stage 3: Revising and expanding the taxonomy. At this stage, the taxonomy was expanded to include a few relevant strategies that surfaced as a result of field testing. We then expanded the taxonomy in a different and more dramatic way to cover all four language skills: listening, reading, speaking, and writing. No previous strategy taxonomy has systematically shown how a given strategy applies to each of the four language skills. We also added examples where they were needed to clarify use of the strategies in the four skill areas, creating an expanded, comprehensive, four-skill learning strategy taxonomy with examples.

Applications of the New Taxonomy

The taxonomy can be used by language teachers, students, curriculum developers, program administrators, and researchers in a variety of ways. Teachers can use the taxonomy to design activities which help students develop more effective strategies. Students can pick up new strategy ideas or simply become more aware of their own strategies. Curriculum developers and language program administrators can create strategy training plans using the taxonomy and design materials and curricula which capitalize on strategies known to be used by learners. Researchers can obtain ideas for directions for new investigations based on the taxonomy.

How to Read and Use the Simplified Taxonomy

Appendices A and B present the simplified taxonomy. This version is chiefly useful as a quick aid for understanding any given strategy and for placing that strategy in a context with similar strategies. For example, a learner might want to understand the strategy of "Elaboration." The taxonomy describes this strategy as relating new information to other concepts in memory by means of associations, which may be simple or complex, commonplace or bizarre. The taxonomy also indicates that elaboration is one of a large number of "Memory Building" strategies, which are all primary strategies because they focus the learner directly on the language forms to be learned.

The taxonomy contains two main groups of strategies: primary strategies and support strategies. Primary strategies operate directly on the language itself and are sometimes called direct strategies (Rubin, 1981) or cognitive learning strategies (O'Malley, Russo, & Chamot, 1983). Support strategies, or indirect strategies (Rubin, 1981), enhance or support learning indirectly by creating a good attitude in the learner, establishing learning goals, and reducing the learner's frustration, tension, fatigue, or anxiety (Dansereau, 1978). Support strategies, which involve consciously understanding and regulating one's own learning, are sometimes called metacognitive strategies. The terms cognitive and metacognitive are not used in our taxonomy but are mentioned here to clarify their relationship to the main classifications, primary strategies and support strategies.

Usually, the reasons for assigning any given strategy to either the primary or the support classification are fairly obvious, but some assignments may need explanation. For example, "Learning the Rules" (covering "Rule Strategies" and "Reasoning Strategies") and "Practicing the Real Thing" (i.e.,

authentic language use) are included as primary strategies because they both deal with the language itself. Some socially mediated strategies, such as "Asking Questions," are included as primary strategies, because they directly involve use of the language. Other socially mediated strategies, such as "Social Cooperation" and "Creating Practice Opportunities," are listed under support strategies. Strategies for "Getting Organized," such as "Previewing" and "Focusing Attention," have been viewed by some researchers as support strategies but are listed here as primary strategies because they usually require direct involvement with the language. General study skills, called "Setting the Stage," are shown as support strategies in the taxonomy.

The distinction between primary and support may become blurred in practice, because primariness or supportiveness may be more a matter of degree than of category. Therefore, the classification of any strategy into one of these broad categories should not necessarily be considered absolute. The two-part division of strategies does, however, provide a useful framework for understanding how strategies work.

Note that there are many more primary strategies listed than support strategies, largely because the mnemonic group is so extensive. Support strategies are very important, however, so important that without their aid, even the most sophisticated and useful primary strategies might prove ineffective.

The strategies listed in the taxonomy should be viewed as descriptive but not prescriptive. The fact that a strategy is included in the taxonomy doesn't mean that it is always useful. A few strategies, such as "Rote Memorization," are rarely helpful but are included because they are frequently used. Some strategies (e.g., certain types of "Memory Building" strategies) may be most

applicable at early stages of second language learning and may not be as useful later. Other strategies (e.g., "Long-Term Goal Setting") may be relevant at all stages of the learning process but may be especially relevant as the learner advances in his or her studies. Still other strategies, such as "Practicing the Real Thing," may be generally useful for all language learners.

Summary

This paper has presented three research themes: importance of second language learning strategies, effectiveness of strategies as demonstrated by research, and definition and classification of these strategies.

Some of the main findings presented here are:

1. Second language learning strategies are important because they improve language performance, encourage learner autonomy, are teachable, and expand the role of the teacher in significant ways.

2. Research results concerning general academic learning strategies are relevant to second language learning.

3. Interesting but unvalidated strategy lists have influenced teachers' understanding of second language learning strategies.

4. Observations of second language learning strategy use are inconclusive.

5. Interviews, notetaking, and diaries have provided useful data about second language learning strategies. These methods have shown that differences in achievement in second language learning are often linked to differences in strategy use.

6. Self-report surveys provide more uniform and reliable data on second language learning strategies than do less structured self-report methods. Self-report surveys show that practice with authentic language may be useful at

all stages of language learning and that some strategies, such as monitoring one's own errors, may be more useful in some language tasks (e.g., writing) than in others (e.g., speaking).

7. Although the effectiveness of many learning strategies depends on the characteristics of the learner and the task, two factor analytic studies suggest that a few strategies may be generally useful for almost all language learners. Authentic language practice, practice with rules, communication strategies, general study skills, and memory strategies are very useful to widely different groups of second language learners--even though the relative emphasis may differ somewhat.

8. Training studies concerning second language learning strategies have proven that such strategies can be taught and that those strategies can affect language performance.

9. The new taxonomy of second language learning strategies presented here is based on a comprehensive research review as well as our own survey results. This taxonomy, especially in its expanded, four-skill version, is the most complete system currently now available for classifying second language learning strategies.

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Appendix A

Primary Strategies for Second Language (L2) Learning: A New Taxonomy (Simplified Form)

Getting Organized	
Previewing	Making a comprehensive preview of the specific organizing concept, main principle, or key material in upcoming language activity
Focusing Attention	
Directed-Attention	Deciding in advance to attend to in general an actual L2 learning task and to ignore irrelevant distractors; may include attention-enhancing techniques such as active listening, silently answering even when not called upon, reading aloud to oneself, etc.
Selective Attention	Deciding in advance to attend to specific aspects of L2 input or situational details that will cue the retention of specific L2 information
Getting the Meaning	Using all available information to guess meanings of new L2 items, predict outcomes, or fill in gaps; such information might include knowledge of the L2 or the L1, knowledge of the topic or culture, perception of the speaker (tone of voice, emphasis, body language, distance, status, sex), and awareness of the situation
Showing You Understand	
Taking Notes	Writing down some key points, either in the L1 or the L2
Outlining	Making a mental or written outline of the main idea and other important points
Summarizing	Making a summary of information presented
Highlighting	Marking, underlining, or otherwise highlighting a new word, phrase, or rule

Appendix A (continued)

Primary Strategies for Second Language (L2) Learning:
A New Taxonomy (Simplified Form)

Showing You Understand (continued)

Recognizing and Using Contexts	Focusing on emphasis markers, such as numbers, familiar names, transitions, sequence, and other elements, which help establish context

Communicating

Asking Questions	Asking a teacher or native speaker to repeat, clarify, paraphrase, explain, or give examples of a specific L2 item; asking for verification of an item; asking if a specific utterance is correct; asking if a rule fits a particular case; paraphrasing or repeating
Keeping the Conversation Going	Attempting to continue the oral or written communication by using L2 filler words ("uh," "let's see..."), synonyms, circumlocutions, mime, gestures, compensatory code switching, anglification, avoidance of topics in which the learner does not feel confident, word coinage, and word substitution

Practicing

Recombining	Constructing a meaningful sentence or longer language sequence by combining known elements in new ways, especially for use in naturalistic settings
Practicing the Real Thing	Practicing the L2 in natural L2 settings, such as movies, lectures, parties, and conversations with native speakers
Talking to Yourself	Conducting brief or extended conversations with oneself in the L2 in order to practice
Playing Games	Using L2 games to improve one's L2 proficiency
Developing Routines	Being aware of and/or using prefabricated or formalized speech routines in natural settings

Appendix A (continued)

Primary Strategies for Second Language (L2) Learning:
A New Taxonomy (Simplified Form)

Practicing (continued)	
Imitating	Using imitation of a native speaker or writer to enhance one's own language performance
Learning the Rules	
Rule Strategies	
Rule Search/Application	Looking for, being aware of, and/or using rules in the L2
Rule Generation/Revision	Generating one's own internal rules about the L2 and revising them when new information appears
Rule Overgeneralization	Simplifying the rules of the L2 and applying them too generally in practice (useful in early stages of L2 learning)
Rule Exercises	Practicing rules through language exercises orally or in writing
Reasoning Strategies	
Deductive Reasoning	Using a syllogistic, "if-then" model to reason about specification elements of the L2
Analysis of Word Parts	Finding the meaning of an L2 expression by breaking it down into parts
Contrastive Analysis across Languages	Analyzing elements of the L1 and the L2 to determine likenesses and similarities
Learning Outside of Class	Using L2 resources or reference materials such as dictionaries, glossaries, computer-assisted instructional routines, tape recorders, etc.

Appendix A (continued)

Primary Strategies for Second Language (L2) Learning:
A New Taxonomy (Simplified Form)

Memory Building	
Elaboration	Relating new information to other concepts in memory by means of associations, which may be simple or complex, commonplace or bizarre
Listing	
List-Making	Making a list of new L2 material to be memorized without grouping it in any particular way
List-Breaking	Dividing a long list of L2 items into parts in order to learn the parts one at a time
Listing by Attribute	Classifying or reclassifying the L2 material to be learned based on common attributes (e.g., nouns) or on opposition (e.g., black-white, hot-cold)
Locating New Material in Places, Situations, or Contexts	
Loci	Remembering L2 information by remembering its location in the notebook, on the page, on the blackboard, or in a mental picture
Situationalism	Remembering a new word by associating it with the situation in which it was first heard or read by the learner
Contextualization	Being aware of and/or creating a context in order to remember new L2 words or phrases
Using Sounds	
Acronyms	Being aware of and/or using an acronym as an aid for remembering the whole set of L2 words
Phonetic Cues	Using accent marks, phonetic spelling, or any other means to memorize the sounds

Appendix A (continued)

Primary Strategies for Second Language (L2) Learning:
A New Taxonomy (Simplified Form)

Memory Building (continued)	
Using Sounds (continued)	
Rhyming	Using rhymes or associated techniques, such as alliteration or assonance, to remember words according to their sound characteristics
Auditory Association	Associating a new L2 word with a known word that sounds like it
Using Images	
Mental Imagery	Using a mental image to help remember a new word or phrase
Drawing	Making a drawing of the new word or phrase
Keyword Method	Remembering a new L2 word by (a) identifying a familiar L1 word that sounds like the L2 word (auditory link) and (b) generating an easily recalled mental image of the L2 word "interacting" with the L2 word (visual link)
Using Actions	
Card Moving	Moving cards from one place to another when the word is learned
Physical Response	Acting out a new word or phrase physically in order to memorize it
Physical Sensation	Associating a new word or phrase with a physical sensation or feeling

Appendix A (continued)

Primary Strategies for Second Language (L2) Learning:
A New Taxonomy (Simplified Form)

Memory Building (continued)

Other Memory Techniques

Flashcards	Listing a new L2 word or phrase on one side of the card and its L1 equivalent on the other; can color-code different types of words on the cards
Silent Rehearsal	Silently repeating a new L2 word to oneself so as to memorize it (without yet using it)
Whole Passage	Memorizing a whole passage as a unit; learning songs, jingles, commercials, poems, etc.
Rote Memorization	Memorizing by rote a new word, phrase, or rule without fully understanding why or how it is used
Repetition	Repeating a new word or phrase in order to memorize it

Appendix B

Support Strategies for Second Language (L2) Learning: A New Taxonomy (Simplified Form)

Setting the Stage	
Scheduling	Devising and using appropriate schedules to complete assignments regularly, on time, and in suitable increments
Organization	Organizing one's work in the most efficient manner
Environment	Creating an optimal environment for learning (involving factors such as noise, temperature, amount of space, etc.)
Dealing with Attitudes and Motivation	
Self-Encouragement	Saying or writing positive statements to oneself in the L1 or the L2 in order to feel more confident or capable in one's L2
Anxiety Reduction	Reducing anxiety, especially when oral production demands are high, by means of relaxation, meditation, and other techniques
Perseverance	Continuing to study the L2 despite the difficulty of the material or the complexity of the task
Planning and Goal-Setting	
Long-Term Goal Setting	Setting one's own long-term goals for L2 learning (by months or years)
Short-Term Goal Setting	Setting one's own short-term goals for L2 learning (by hours, days, weeks)
Functional Planning	Planning for and rehearsing L2 linguistic components necessary to carry out an upcoming language task

Appendix B (continued)

Support Strategies for Second Language (L2) Learning:
A New Taxonomy (Simplified Form)

Self-Management	
Self-Monitoring	Analyzing one's own errors and correcting one's own mistakes
Self-Assessment Self-Evaluation Self-Estimation	Checking the outcomes of one's own language learning against an internal or external measure of completeness, quality, or accuracy; measuring one's own progress against short-term or long-term L2 goals
Self-Diagnosis and Self-Prescription	Assessing one's own strengths and weaknesses in the L2 and determining what must be done to deal with the weaknesses
Self-Reinforcement	Arranging for tangible rewards for oneself when an L2 learning task is successfully completed
Social Cooperation	Working with other people to obtain feedback, share information, review, correct, practice, etc.
Creating Practice Opportunities	Consciously seeking out or creating as many opportunities as possible to practice the L2; for example, going to movies or social events, listening to the radio or to records, finding L2 pen pals, meeting native speakers, and reading L2 books or magazines
Cultural Orientation	Studying the culture, history, and society surrounding the L2 in order to better understand and/or use the L2

ABOUT THE AUTHOR

Rebecca L. Oxford, Ph.D., is a senior researcher at the Center for Applied Linguistics. She is involved in language testing, instructional design, learning strategies, and computer-assigned language learning. She is currently writing a teacher training text on second language learning strategies for Newbury House/Harper & Row.